

### **REMARKS**

This is a full and timely response to the Office Action mailed April 1, 2009, submitted concurrently with a one month extension of time to extend the due date for response to August 3, 2009.

By this Amendment, claim 1 has been amended to more particularly define the present invention. Further, new claims 12 and 13 have been added to further protect specific embodiments of the present invention. Thus, claims 1-13 are currently pending in this application. Support for the claim amendments and new claims can be readily found variously throughout the specification and the original claims.

More specifically, in claim 1, the phrase "*each of which comprises a virtual operation object*" is supported by the phrase "*a virtual operation object drawn on each of the virtual images*" in original claim 1. Also, in claim 1, the phrases "*a see-through head mounted display,*" "*the display unit being configured so that the operator can see through the see-through head mounted display to directly see a real object itself and can also see a virtual image replayed with the see-through head mounted display,*" and "*which the operator can directly see through the see-through head mounted display*" are supported by page 6, lines 13-14 and 18-21, and page 12, lines 20-28, of the specification. Lastly, new claims 12 and 13 are supported by page 6, lines 14-15, and page 12, lines 20-28, respectively, of the specification.

In view of these amendments, Applicant believes that all pending claims are in condition for allowance. Reexamination and reconsideration in light of the above amendments and the following remarks is respectfully requested.

### **Rejections under 35 U.S.C. §103**

Claims 1-6 and 9-11 are rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Wendt et al. (U.S. Patent Application Publication No. 2002/0082498) in view of Jahn et al. (U.S. Patent Application Publication No. 2002/0089544). Further, claims 7-8 are rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Wendt et al. (U.S. Patent Application Publication No. 2002/0082498) and Jahn et al. (U.S. Patent Application Publication No.

2002/0089544), and further in view of Casby et al. (U.S. Patent No. 6,085,428). Applicant respectfully traverses these rejections.

To establish an obviousness rejection under 35 U.S.C. §103(a), four factual inquiries must be examined. The four factual inquiries include (a) determining the scope and contents of the prior art; (b) ascertaining the differences between the prior art and the claims in issue; (c) resolving the level of ordinary skill in the pertinent art; and (d) evaluating evidence of secondary consideration. *Graham v. John Deere*, 383 U.S. 1, 17-18 (1966). In view of these four factors, the analysis supporting a rejection under 35 U.S.C. 103(a) should be made explicit, and should "identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the [prior art] elements" in the manner claimed. *KSR Int'l. Co. v. Teleflex, Inc.*, 127 S. Ct. 1727, 82 USPQ2d 1385, 1396 (2007). Further, the Federal Circuit has stated that "rejections on obviousness cannot be sustained with mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." *In re Kahn*, 441 F.3d 977, 988, 78 USPQ2d 1329, 1336 (Fed. Cir. 2006). Finally, even if the prior art may be combined, there must be a reasonable expectation of success, and the reference or references, when combined, must disclose or suggest all of the claim limitations. *See in re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Applicant submits that the Examiner has failed to establish a *prima facie* case of obviousness because the combined prior art fails to disclose or suggest all of the claim limitations with particular emphasis on the limitations:

*a virtual image memory configured to store virtual images each of which comprises a virtual operation object;*

*a display unit having a see-through head mounted display positioned in front of operator's eyes, the display unit being configured so that the operator can see through the see-through head mounted display to directly see a real object itself and can also see a virtual image replayed with the see-through head mounted display;*

*a virtual image replay means configured to replay the virtual images on said display unit in order of each of operation steps; and*

*a virtual image adjusting means configured to adjust the virtual images such that a virtual operation object in a virtual image replayed with the display unit will have an overlapping relation with the corresponding real operation object itself which the operator can directly see through the see-through head mounted display.*

The Examiner has argued that Figure 3 and paragraph [0028] of Wendt et al. discloses "*a head-mounted display unit which displays a virtual image in contrast to a real image in front of the user*" (see middle of page 2 of the Office Action). However, based on Applicant's review of Wendt et al., Applicant disagrees with the Examiner's interpretation in this regard.

As shown in Figure 3 and described in paragraph [0028] of Wendt et al., the apparatus of Wendt et al. comprises a stereo pair of cameras, and a stereo display which is positioned in front of the surgeon to cut off the view. The surgeon can only simply see the screen of the stereo display. In other words, the surgeon only sees the stereoscopic images of the real scene captured by the video cameras attached to the head-mounted display and not the real scene directly since the images of the real scene are processed by the video cameras (i.e. "*video images are blended together with the computer images of the internal anatomical structures and displayed on the head-mounted stereo display in real time*").

In contrast, the present invention comprises a display unit which has a see-through head mounted display positioned in front of operator's eyes and is configured so that the operator can see through the see-through head mounted display to directly see a real object itself and can also see a virtual image replayed with the see-through head mounted display. In other words, in the present invention, the images of the real object itself are not captured by the see-through head mounted display and processed to blend with the virtual image. Instead, the real object itself is directly seen by the operator through the see-through head mounted display.

The Examiner has also argued that paragraphs [0028] and [0033]-[0037] of Wendt et al. disclose that a virtual image of the brain is superimposed over the actual image of the brain and computer 12 processes pose data to ensure that the virtual brain image corresponds exactly with the actual brain of the patient.

However, as stated above, in the apparatus of Wendt et al. (see especially paragraph [0028] of Wendt et al.), the pair of video cameras only capture a stereo view of the real scene and the video images are blended together with the computer images of the internal anatomical structures and displayed on the head-mounted stereo display in real time. Although, to the surgeon, the internal structures appear directly superimposed on and in the patient's brain, the internal structures are actually directly superimposed on and in the captured images of the patient's brain.

That is, as shown in Figure 3, stereo images are produced from the video images captured by the stereo pair of video cameras, and blended with the computer images at the same time. Thus, it is clear that the stereo images captured by the stereo pair of cameras are not the real operation object itself.

To cure the deficiency in Wendt et al. of failing to teach "*a virtual image memory configured to store, with respect to an operation composed of a sequence of operation steps, virtual images for explaining a content of each of the operation steps*", the Examiner has cited the teachings of Jahn et al. More specifically, the Examiner believes that Figure 3 of Jahn et al. showing virtual images 14 which contain information about how to perform an operation on the real operation object reads on such a limitation of the present invention.

However, for the reasons detailed above, Wendt et al. fail to disclose the display unit of the present invention and also fail to disclose overlapping a virtual operation object with the corresponding real operation object itself. Hence, even if the head-mounted display taught by Wendt et al. is modified with the teachings of Jahn et al., one of ordinary skill in the art still cannot arrive at the present invention.

Nevertheless, to further emphasize these distinctions between the present invention and that which is disclosed in the cited references, Applicant has amended independent claim 1 to recite:

1. *a display unit having a see-through head mounted display positioned in front of operator's eyes, the display unit being configured so that the operator can see through the see-through head mounted display to directly see a real object itself and can also see a virtual image replayed with the see-through head mounted display; and*
2. *a virtual image adjusting means configured to adjust the virtual images such that a virtual operation object in a virtual image replayed with the display unit will have an overlapping relation with the corresponding real operation object itself which the operator can directly see through the see-through head mounted display.*

As a result, Applicant believes that independent claim 1 is allowable over the cited references. Original claims 2-11 and newly added claims 12-13 depend directly or indirectly from claim 1 and includes all of the features of claim 1. Therefore, in view of such dependencies, it is respectfully submitted that dependent claims 2-13 are allowable at least for the reasons that independent claim 1 is allowable as well as for the features they recite.

Thus, for these reasons, withdrawal of the outstanding rejections is respectfully requested.

### CONCLUSION

For the foregoing reasons, all the claims now pending in the present application are believed to be clearly patentable over the outstanding rejections. Accordingly, favorable reconsideration of the claims in light of the above remarks is courteously solicited. If the Examiner has any comments or suggestions that could place this application in even better form, the Examiner is requested to telephone the undersigned attorney at the below-listed number.

Dated: August 3, 2009

Respectfully submitted,

By: 

Lee Cheng

Registration No.: 40,949

CHENG LAW GROUP PLLC

1100 17th Street, N.W.

Suite 503

Washington, DC 20036

(202) 530-1280

Attorney for Applicant

Should additional fees be necessary in connection with the filing of this paper, or if a petition for extension of time is required for timely acceptance of same, the Commissioner is hereby authorized to charge Deposit Account No. 50-4422 for any such fees; and applicant(s) hereby petition for any needed extension of time.